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Descriptions of two new species of **EXOTIC UNIONES** and one
MONOCONDYLÆA.

BY ISAAC LEA.

UNIO PARAMATTENSIS.—Testâ crebrè et leviter sulcatâ, ellipticâ, subinflatâ: valdè inæquilaterali, posticè obtusè angulatâ, anticè rotundatâ; valvulis crassiusculis, anticè paulisper crassioribus; natibus prominulis, ad apices radiis undulatis; epidermidè tenebroso-fuscâ, nigricante, eradiatâ; dentibus cardinalibus parvis, valdè compressis, obliquis, valvulæ dextræ duplicibus; lateralibus prælongis, lamellatis subrectisque; margaritâ albâ et valdè iridescente.

Hab.—Paramatta River, New South Wales, Smithsonian Institution.

UNIO PAZII.—Testâ lævi, obliquâ, anticè inflatâ, valdè inæquilaterali, posticè acuto-angulatâ et attenuatâ, anticè rotundatâ; valvulis crassiusculis, posticè paulisper crassioribus; natibus tumidis, subterminalibus; epidermide olivaceâ, obsoletè radiatâ et transversè latè vittatâ; dentibus cardinalibus longis, lamellatis, valdè obliquis corrugatisque; lateralibus prælongis, obliquis, lamellatis corrugatisque; margaritâ vel albâ vel cæruleâ et valdè iridescente.

Hab.—China. Sig. Patricio Maria Paz.

MONOCONDYLÆA WHEATLEYI.—Testâ lævi, oblongâ, subcompressâ, valdè inæquilaterali, anticè obliquè rotundatâ, posticè truncatâ; valvulis subcrassis, anticè paulisper crassioribus; natibus parvis, acuminatis, ad apices minutissimè undulatis; epidermide luteâ, nitidâ, eradiatâ; dentibus cardinalibus parvis, erectis, in utroque valvulo uno-tuberculatis; margaritâ albâ et valdè iridescente.

Hab.—River Tigris, Assyria, Rev. Mr. Beadle, by C. M. Wheatley.

Contributions to **NEOTROPICAL SAUROLOGY**.

BY E. D. COPE.

Phyllodactylus spatulatus.

Muzzle elongate, rounded, depressed, extending anterior to the orbit once and one-third times the diameter of the latter. Frontal and nasal regions closely squamulose tuberculous, each tubercle as large as those that are scattered upon the occiput. Superior labials six, the last minute; inferior labials five. Symphyseal elongate campanuliform in outline, succeeded by three or four transverse series of mental plates. The anterior is composed of three (median smallest), which are much longer than broad; the posterior are hexagonal. About twenty-five rows of abdominal plates, and twenty rows of elongate trihedral dorsal tubercles. Extremities coarsely tuberculous. Length of head to angle of mandible 8 lin.; from this point to vent, 1 in. 9 lin.; of hinder extremity, 1 in.; tail? Above pale yellowish; a dark brown line from orbit to shoulder; dark brown longitudinal lines, which inosculate on the nape and anterior dorsal region; on the posterior dorsal and sacral they form cross-bands. Extremities banded. Beneath immaculate.

Habitat.—Barbadoes. Prof. Theodore Gill coll.

Anolis (Acantholis) argillaceus.

Size small, form stout. Head large, the muzzle short. Canthus rostralis straight, sharp; facial rugæ very obtuse, uniting a little anterior to the middle of the muzzle, and forming a slightly pronounced median keel. Tail one and one-half times the length of the body, slightly compressed and trenchant, though not serrate above; its scales keeled. No dorsal dermal fold. A slight prebrachial fold. Nares vertical. Orbit large; tympanic orifice moderate; dorsal and lateral scales minute, equal, except an occasional one a little

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larger. Abdominal scales rounded, smooth; those of the extremities smooth. Occipital plate not in contact with superciliaries; the latter are in contact medially, and number six or seven on each side; the anterior pair is much the longest, and enclose a subtriangular plate. The second plate on the facial ruga is large, transverse; the third is large and in contact with that of the other side and with the third plate of the canthus rostralis. Anterior to them is a median plate. The rest of the head plates are small, all are perfectly smooth. Two or three loreal rows. Superior labials six. Palpebrals three or four, transverse, forming an isolated disc. First infralabial large. Goitre well developed.

In alcohol, above brownish white, with two rows of brown spots on each side; occasionally a median series of dots. A short, median, nuchal band; two convergent lateral cervical bands; a dark band between the eyes. Extremities brown banded.

Habitat.—Eastern Cuba, (estate of Monte Verde.) From a valuable collection made there by Mr. Chas. Wright. Mus. Academy Phila. and Smithsonian, (No. 5098.)

This species has an occasional large granular scale in place of the dermal appendages of the *loysianus*. In that species the muzzle is more elongate; the third plate of the facial ruga is not in contact with that opposite, or with that of the canthus rostralis; the scales of the canthus are narrower. There are four or five palpebral plates, never three. The coloration is also different.

Anolis (Ctenocercus) coelestinus.

Size medium, form slender. Tail more than twice as long as head and body, cylindrical, the vertebral series of scales largest. Abdominal scales subquadrate, smooth, those of the back and sides subequal, coarsely granular, smooth. No dorsal or nuchal dermal folds. The hinder extremity directed forward reaches the ear; the anterior, four-fifths the distance to the groin. Digital expansions well developed. Goitre large; a prebrachial fold. Head elongate, front very little concave, nostrils latero-vertical close, to the extremity of the muzzle. Canthus rostralis acute, straight, covered with small scales; facial rugæ none. Head plates all small, keelless. Seven in the superciliary series, the posterior minute; two rows of scales separate those of one side from those of the other; they are also well separated from the occipital, which is small oval. Five loreal series. Eight superior labials; anterior infralabials small, keelless. Palpebrals small, scarcely keeled, separated from the superciliaries by granules. Length of head and body 2 in. 6 lin.; of posterior extremity 1 in. 4 lin.

Color above bright bluish green (in alcohol), the extremities bluer. A white or reddish band extends beneath the orbit, through the ear to a short distance beyond the axilla. Above and behind the latter a large black spot extends more or less posteriorly. A reddish tint sometimes pervades parts of the inferior surfaces; otherwise they are greenish white. Tibia and femur indistinctly dark cross-banded. Postorbital and sometimes the loreal and frontal regions blackish.

Habitat.—Western Hayti. Specimens obtained by Dr. Weinland near Jeremie (No. 1500 Mus., Compar. Zool.) have been kindly lent me by Prof. Agassiz.

This species takes the place of *A. principalis* in Hayti. It is the nearest ally of that species, but differs in important particulars, as the smoothness of the abdominal and frontal plates, the smallness of the latter, and the absence of facial rugæ; the digital expansions are less developed and the nostrils are more anterior.

Anolis (Anolis) cybotes.

Size above medium; form stout, head massive. Tail much compressed, ser-
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ulate above. Digital expansions rather narrow. Abdominal scales smooth rounded; scales of the lateral thoracic region keeled. A strong nuchal dermal fold and a slight dorsal one. Lateral and dorsal scales minutely granular, except two to four median series, which are larger and keeled. Anterior brachial, antebrachial and tibial, and inferior tibial scales keeled. Angular process of mandibulum prominent. Temporo-occipital region swollen; occiput with a median, gemmiform, sharply-defined depression, which is continuous with the gutter-like frontal concavity. The facial rugæ are well defined, little divergent, including rather a deep longitudinal depression. Nostrils large, lateral; canthus rostralis sharp, a little curved, depressed anteriorly. Superciliary plates large, five on each side, in contact or barely separated medially. Frontal scales rather large, longitudinal, smooth. Occipital plate elongate, small, separated from superciliaries. Seven or eight loreal rows; seven superior labials; symphyseals large, first infralabial not large. Tympanic orifice large. Anterior extremity extended, reaches beyond the groin; the posterior anterior to the orbit. Length of head to angle of jaw 9 lines; from angle of mandible to vent 1 in. 8 lin.; hind extremity 2 in. 2 lin.

General color green, with blackish tints. Posterior extremities sometimes cross-banded. Female with a pale vertebral streak.

Habitat.—Western Hayti; from near Jeremie, Dr. Weinland. Mus. Compar. Zoology, Cambridge, No. 1501.

Anolis (Coccoëssus) pentaprión.

Size medium; form stout. Tail one and a quarter times the length of the head and body, much compressed, subtriangular in section, the vertebral angle trenchant, serrate; four basal angles formed by the continued keels of as many series of large scales. Goitre large. Scales of the back and sides equal, minute, the abdominal larger, though small, subgraniform, smooth. Orbits large, auricular orifice small. Head stout, muzzle thick, rounded. Canthus rostralis obtuse anteriorly, facial rugæ just traceable posteriorly. Nares near the end of the muzzle, lateral. Occiput covered with numerous irregular smooth plates, which extend between the superciliary series. Plates of the front and muzzle rather small, polygonal, rough, not keeled; palpebrals numerous, smooth, three loreal rows; nine superior labials, nine inferior, the second small. Infralabials small. Extremities stout, their scales small, not keeled; digital expansions well developed. The anterior extremity does not reach the groin, the posterior scarcely the auricular orifice. Length of head and body 2 in. 6 l.; of tail 3 in. 4 l.; head to ear 8 l.; hinder extremity 1 in. 2 l.

Above whitish, tinted with reddish brown, and marbled with brown. Extremities and tail pale reddish brown with brown cross-bars. Frontal and occipital regions dark, muzzle pale; some brown shades beneath the eye on both jaws. Beneath yellowish; goitre cherry red.

Habitat.—New Granada, near the river Truando. Discovered by Arthur Schott, Esq., who accompanied the U. S. Expedition under Lieut. Michler.

The shape of the tail and the subgranular ventral scales place this species in a section of the genus which I call *Coccoëssus*. It is most nearly allied to sect. *Gastrotropis*, Fitz., in which *A. schiedii* Wieg. resembles it in many respects; the form of the muzzle is much as in this species and in *A. nebulosus*.*

Anolis (*Dracontura*) limifrons.

Tail cylindrical, without a larger median series of scales. Ventral scales smooth. Dorsal and lateral scales granular, rugulose, all equal. Scales of arm, inferior tibia and anterior femur keeled. Neck rather elongate; eyes large, head broad, very concave in profile, muzzle prominent, truncate, nearly

* Dr. Gray, Catal. Liz. Brit. Mus., refers *A. sagrae* to this species. They are different, and typical of different sections of the genus.

plane above. Nares large, lateral. Frontal concavity elongate deep, its scales numerous, granular. Facial rugæ moderately developed, divergent, soon obsolete, covered by three scales anterior to the seven superciliary, and separated from the canthus rostralis by larger keeled scales. The canthus is weak, concave. Occipital plate small, oval, surrounded by granular scales, which also separate the superciliaries. Palpebrals keeled; muzzle plates polygonal, tricarinate. Loreal rows about seven; upper labials eight, inferior seven, infralabials small. Anterior extremity slender, not reaching the groin, the external digit shorter than the second; posterior extremity reaches the anterior margin of the orbit. Auricular orifice large, vertical. Length from muzzle to axilla 9 l.; from auricle to vent 1 in. 3 l.; of hinder extremity 1 in. 4 l.

Above bronze brown, beneath rusty white, separation between the two abrupt anteriorly; lips and femora beneath varied with brown. Another specimen is brownish golden above, light yellow beneath.

This species differs from *fuscoauratus* in the uniform size of the dorsal and lateral scales, and the absence of a larger median caudal row. In *radulinus*, *poeilopus* and *fraseri* the ventral scales are keeled. In the last there is no occipital plate, and the second has the scales of the muzzle no larger than those of the front. *A. radulinus* exhibits a few larger dorsal rows. In general appearance it is quite similar to *A. lionotus*. It inhabits the same country, viz.: Veragua. Mus. Academy Nat. Sciences, from Mr. R. W. Mitchell.

Anolis (Dracontura) poecilopus.

Size medium; neck and hinder extremities elongate; head broad, muzzle full, rather prominent. Tail compressed cylindrical, its scales keeled, the median row largest. Abdominal scales small, ovate, keeled; lateral minute, gradually merging into the dorsal, which are larger, flat, keeled and in numerous rows. All the scales of the extremities are keeled, those of the internal surfaces minute, the others flat, not large. The scales of the upper surface of the head are minute, subgranular, rugulose; those between the canthus rostralis and facial ruga larger. The canthus weakly pronounced, soon obsolete; rugæ slightly developed, bounding a rather deep frontal concavity, which extends between the orbits. Nostrils near the end of the muzzle, lateral. Seven or nine superciliaries bounded internally by granules; occipital minute or wanting. Superior labials nine; infralabials small. Palpebrals small, keeled. Loreal series nine or ten. Auricular orifice small, vertical. No dorsal or nuchal fold; goitre large. Anterior extremity reaching groin; second finger longer than fifth; posterior extremity reaching end of muzzle; digital expansions narrow. From muzzle to tympanum 8 lin.; tympanum to vent 2 in.; tail 4 in. 8 lin.; posterior extremity 2 in. 1 lin.

General color above, brown; the extremities and digits with numerous light cross-bands; sides darker, with numerous longitudinal light lines, one commencing above the axilla most distinct; light vertical bands ascend from this to a superior obsolete longitudinal band. In female specimens dark chevron-shaped spots cross the back. Beneath pale yellowish.

Habitat.—Near Carthagena, and on the Truando, New Grenada. From Lieut. Micheler's collection, made by Arthur Schott. (Sm. No. 4320, 4331.)

This animal probably most nearly resembles the *A. fraseri*, Gthr., but that species is said to have but five rows of loreal scales, the fifth finger longer than the second, and different coloration. In general appearance it approaches near to *A. limifrons*, *fuscoauratus* and *lionotus*. In the last the dorsal scales are much larger and smooth; the scales of the front and muzzle are also larger.

Anolis (Dracontura) vittigerus.

Head rather broad, muzzle short. Tail cylindrical, four times the length of the head and body. Anterior extremity just reaching the groin, posterior ex-
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tending to the middle or in front of the orbit; second finger longer than fifth. The latter is large; tympanic orifice moderate. Nineteen teeth in the superior maxillary bone. Goitre very small. Abdominal scales imbricate subacute, keeled; lateral scales minute; dorsal scales larger, less than the ventral, flat, keeled, in about twenty rows. Anterior brachial, antibrachial and femoral, superior brachial and tibial, and inferior femoral and tibial scales keeled. Occipital plate not in contact with the superciliaries. The latter are rather large, five or six in number, in contact medially. Facial rugæ low, divergent. Frontal depression obpyriform, containing rather large, flat, smooth scales; scales of the muzzle smaller, carinate. Palpebrals numerous, keeled. Canthus rostralis short, acute. Five rows loreal scales; superior labials eight, inferior seven; infralabials small. Length of head and body 1 in. 4 lin.; of tail 5 in. 6 lin.

Light yellowish brown, median dorsal region and tail reddish brown, crossed by some irregular blackish markings. A longitudinal light lateral band, bounded above and below by a brown one. A brown band from eye to axilla, one above it rising to the nape, one from superciliary region nearly joining one from the opposite side behind the occiput. A band between the eyes and one on the muzzle; lips varied. A crossed-band on the tibia and femur formed of two united triangles. Beneath golden with a coppery tint.

Habitat.—Truando region, New Granada. Mr. Schott coll., Lt. Michler's Exped. Mus. Academy; Smithsonian (No. 4332.)

This species is much like *A. lemurinus* in form, but has the larger dorsal rows more numerous, and a different coloration. From *A. chrysolepis* it differs in the more numerous series of larger dorsal scales.

Anolis (Gastrotropis) radulinus.

Size small, head not short. Tail cylindrical or slightly compressed, median row of scales a little larger. Ventral scales ovate, keeled; lateral scales minute; the dorsal scales larger, flat, keeled, becoming larger medially, where two series are abruptly larger. Occipital distinct, isolated; superciliaries five, separated by three or four rows of minute scales. Facial rugæ weak, enclosing a shallow concavity, which is covered with minute, keeled scales. Those outside the rugæ and on the muzzle are larger, keeled. Canthus rostralis acute, nearly straight, soon obliterated. Nostrils terminal, lateral. Six or seven rows of loreal scales; labials nine—nine; infralabials small. Auricular orifice rather large, vertical. Goitre large. Digital dilatations very narrow. Anterior extremity reaching groin; the posterior to beyond the orbit. Length of head to tympanum 6 lin.; from tympanum to vent 1 in. 3 lin.; of tail 3 in. 6 lin.

Above golden brown, with eight or ten narrow, chevron-shaped cross-lines, the angles directed posteriorly. A lateral series of small white spots, most distinct anteriorly, beneath which is a light longitudinal band, obsolete posteriorly. A narrow brown band between the eyes; extremities banded. Beneath brownish white. The ♀ is bronze brown, the dorsal line sometimes darker.

Habitat.—Truando region, New Grenada. Lt. Michler Exped. coll. Mus. Academy and Smithsonian (Nos. 4327, 4328.)

In the minuteness of the interrugal scales this species resembles *limifrons*, *poecilopus* and *fraseri*. From the first the keeled ventral plates and other peculiarities separate it; in the second, the frontal and loreal scales are smaller and the large dorsal scales more numerous. The large occipital and coloration will separate it from *fraseri*. *Sallaei*, *cooperi* and *cupreus* resemble it in form, but all have larger frontal and muzzle plates; in *sallaei* the large dorsal rows of scales are more numerous.

Anolis (Gastrotropis) concolor.

Anolis refulgens "Schl.," Hallow., Proc. Acad. Nat. Sci., 1860, p. 480.

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General form that of *A. maculatus*. A strong nuchal fold in larger specimens. Tail cylindrical or slightly compressed. Head elongate, muzzle rather narrow, nostrils lateral. Canthus rostralis straight, loreal region long, perpendicular. Occipital plate large, not in contact with superciliaries, in a depression which is not defined in the young. Facial rugæ not acute, convergent anteriorly; the enclosed depression elongate diamond-shaped, with rather small, more or less keeled scales. Superciliary plates seven, in contact or separated by one series of granules medially. Palpebrals numerous, keeled. Loreal rows five or six. Upper and lower labials eight. Infralabials small. Scales of the extremities small, keeled; abdominal scales keeled; lateral scales minute, dorsal larger, keeled; two median rows abruptly largest. Auricular opening moderate, vertical. Digital expansions moderate; second and fifth fingers nearly equal; anterior extremity reaches groin; posterior, middle or anterior part of orbit.

General color darker or lighter brownish green, the extremities faintly banded. A few dorsal dots in the young.

Habitat.—Nicaragua. Mr. C. Wright, of Capt. Rodger's Exped., collection Mus. Smithsonian (No. 6055); Phila. Academy.

The young of this species may be distinguished from *A. cupreus* Hallow. by the longer muzzle, more prominent facial rugæ and nearer approach of the superciliary plates; from *radulinus* by the same characters, and by the greater size of the interrugal scales and the coloration. *A. cupreus* Hallow. is nearly related to *A. cooperi* Baird, both differing from *A. sallaei* in the less number and uniformity of the rows of keeled dorsal scales. In *cooperi* the first infralabial is large as in *sagrae*, and there is a strong prebrachial fold. The palpebrals are three or four-rowed. In *cupreus* these are only two rowed, and the infralabials are small. The colors are lighter.

A. longicaudus Hallowell, described in the memoir referred to at the head of the description of this species, is allied to *A. tropidogaster* Hallow. Like it, it is a slender animal, the length from the muzzle to the tympanum entering two and a half times into the distance from the latter point to the groin. The tympanum is, however, very much smaller, the dorsal scales are larger and the facial rugæ more strongly pronounced. The head is narrower. *Dracontura bivittata*, described in the same memoir, belongs to the subfamily of Basiliscinae, where it should be placed next to *Thysanodactylus* Gray. In proof of this, it may be stated that the external nares are lateral, and the toes broadly margined. From all the genera it differs in its plain occiput, without enlargement or compression, and the total absence of nuchal, dorsal or caudal crest. Tail compressed. A transverse gular fold. The species may be called *Paraloma bivittata*.

Basiliscus (Cristasaura) nuchalis.

Tail compressed, its superior margin undulate serrate. Dorsal crest low, extending between interscapular and crural regions; its rays eleven. Helmet highly developed, produced posteriorly, where its outline is sigmoid; from its posterior extremity to its anterior, which is between the hinder borders of orbits, its margin is more than twice as long as from the last-mentioned position to the end of the muzzle. It is thin and covered with smooth scales, which are much larger than any on the cranium. Occiput much swollen, its scales smooth; supraorbital scales keeled. Superciliaries ten on each side, separated by three rows of scales. Facial rugæ well developed, enclosing a concavity covered with rough scales. Muzzle scales scarcely keeled. Canthus rostralis acute. Rostral bordered by three plates posteriorly. Labials seven or eight above, nine below. Tympanum half as large as bony orbit. Two gular folds. Abdominal scales keeled. Dorsal flat, subquadrangular, slightly keeled, larger than lateral. Hinder extremity extends beyond the muzzle.

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From muzzle to second gular fold 2 in. ; from fold to vent 3 in. 8 lin. ; from vent to end of tail 16 in. ; length of hinder extremity 5 in. 6 lin.

General color olivaceous, paler below. A white (or yellow) band from the superior posterior angle of orbit, which extends half way to the helmet. A rusty-brown band extends from above the tympanum to the posterior part of the back. Three transverse black spots on the nape.

Habitat.—Near Greytown, Nicaragua. Discovered by Dr. Caldwell, who sent specimen 5845 to the Smithsonian Institution.

Dr. Gray says of his *Cristasaura mitrella*, that the scales of the crest are smaller than those of the front, and slightly keeled, also that the dorsal crest is high—which is, however, only important specifically when compared with the development of the helmet. The coloration of that species is also different. It is an inhabitant of Honduras.

Scartiscus caducus.

Char. gen.—Body depressed. A median dorsal keel, which forms a low crest on the nape. Tail slender, compressed, covered with appressed equal verticils of weakly-keeled scales. Digits 5--5, without lateral expansions, strongly pectinate inferiorly. Tympanum distinct. Nostrils in a single plate, which is lateral and below the canthus rostralis. Head plates numerous, small, keeled ; interparietal, parietals (in contact) and postparietal only distinguishable. Pterygoid teeth none ; maxillaries tricuspid. No antepectoral fold. Scales of the body large, flat, caducous, keeled everywhere ; the dorsal in posteriorly convergent series. No femoral or anal pores.

In this genus of *Iguanidæ*, there are two pairs of abdominal ribs,* connected by a slight linea alba. In *Brachysaurus*, which resembles *Scartiscus* in general appearance, these are more numerous ; the external nares also are superior to the canthus rostralis. In *Polychrus*, the representative of the *Gastroleur* type with lateral nostrils, the general form and squamation are totally different. The position of the nostril will distinguish *Scartiscus* from many *Humivagæ* (e. g. *Liocephalus*), and the compressed spineless tail will separate it from others.

Char. specif.—Labials very narrow ; inferior, to proc. coron. mand. six, superior four, bounded above by a similar series of seven ; symphyseal single. Scales of head everywhere keeled ; two larger superciliary series distinguishable, which are in contact medially. No earlobes. A slight preaxillary fold. A lateral crural keel on each side. Posterior extremities elongate, extending forward to anterior border of orbit. Tibia longer than femur ; foot much longer than tibia or than hand and antebrachium. External toe reaching beyond internal. Brachium shorter than antebrachium ; order of digits, first, fifth, second ; third and fourth nearly equal. Whole anterior extremity reaching nearly to groin. Head to posterior border of tympanum equals longest measurement of tibia.

Color above brown, with numerous dark brown chevrons, the angles directed posteriorly ; a narrow, vertical, yellow line from the axilla. Extremities and tail cross-banded. Beneath yellowish brown, the throat darker, light varied.

Length of head and body to vent 3 in. 3 lin. ; of tail 6 in. 3 lin. ; of anterior extremity 1 in. 6 lin. ; of posterior do. 2 in. 7 lin.

Habitat.—Paraguay. Mus. Smithsonian (No. 5852). Capt. Page's Exped. coll.

Liocephalus personatus.

Head shields keeled, not lanceolate. First internasal not in contact with

* Dr. Fitzinger places *Laemactus* among the *Gastroleuræ*, but it seems incorrectly. *Laemactus longipes* is destitute of abdominal ribs. *Chamaeleopsis hernandezii* there is one pair which do not meet on the median line.

rostral. Six or seven in the supraocular series. Interparietal lanceolate. Across the middle of the nape, between lines continuous with the temporal ridge, eleven rows of scales may be counted. Cheek with rather large keeled scales; four thick marginal auricular scales. Labials five—five. Prebrachial folds conspicuous. Dorsal crest high, higher upon the origin of the tail. The tail is very much compressed. Posterior extremity reaching tympanum. Length from muzzle to vent 2 in. 11 lin.; vent to end of tail 5 in. 4 lin.; greatest depth of tail 4 lin.

Above light brown, many of the scales with greenish shades; a few median black spots on the nape. Side of the head, and posteriorly nearly to axilla, also chin and jaw, black. Beneath bluish green, the sides of the abdomen, the hinder extremities and tail, varied with greenish white scales.

Habitat.—Hayti (near Jeremie). Sent in a valuable collection made by Dr. D. F. Weinland to Prof. Agassiz. Mus. Comparative Zoology, Cambridge, Mass.

The West Indian *Liocephali*, with smooth ventral scales, possess either three pairs of fronto-nasal plates in addition to the supranasals, or only two. Of the former description are *L. carinatus* Gray (*microlophus* Coct. Bibr.) *L. vittatus* Hallow. (*schreibersii* Gray), *L. macropus* n. sp., *L. schreibersii* and *L. melanochlorus* n. sp. Those of the latter kind are *L. raviceps* n. sp., *L. trigeminatus* n. sp. and the subject of the preceding description.

Liocephalus trigeminatus.

Head shields slightly keeled, not lanceolate; first internasal not in contact with rostral; six or seven supraoculars; interparietal lanceolate. Ten nuchal rows. Nuchal and dorsal crest low, caudal elevated. Labials six—five; temporal scales large; two principal marginal auricular. Lateral neck folds very strong. Post auricular scales not granular. Posterior extremity not quite reaching orbit. Tail much compressed. Length from muzzle to vent 2 in. 1 lin.; vent to end (?) of tail 2 in. 10 lin.; of hinder extremity 1 in. 6 lines.

Above olivaceous brown, with four narrow, transverse, blackish brown bars, bordered behind with lighter; the posterior between the groins. Tail spotted above, a light lateral band from the orbit to the base of the tail, and another from the ear to the groin; between these brown with a few vertical blackish brown bars. Beneath dirty greenish white, chin spotted with brownish.

Hab.—Hayti, near Jeremie. Dr. Weinland's Coll. in Mus. Compar. Zool.

Liocephalus raviceps.

First internasal often in contact with rostral. Head scales generally strongly keeled. Posterior fronto-nasals remarkably large. Six or seven supraoculars. Interparietal elongate triangular, short. Fifteen nuchal rows, (counted as in *personatus*). Nuchal dorsal and caudal crest equal, little developed. Tail nearly cylindrical. Labials five—six; cheek scales rather small; five large marginal auriculars; post auriculars not granular. All the scales of the body small. Posterior extremity reaching ear or angle of mouth. Length from muzzle to vent 3 in. 1 lin.; from vent to end of tail 4 in. 4 lin.; of posterior extremity 2 in.

Above yellowish brown, with many short, narrow, black longitudinal lines, which are sometimes arranged as a double series of dorsal spots. A dark band from the eye to the groin, which becomes obsolete in age, and is bounded beneath by a rather broad yellowish vitta which is permanent. Beneath yellowish, under surfaces of limbs and abdomen and sides as far as the jaws varied with yellow (white in spirits) scales. Tail with brown chevron-shaped crossbands. Top of head light yellowish brown.

Hab.—Eastern Cuba. Mr. C. Wright discoverer. Mus. Smithsonian (No. 4162) and Academy Phila.

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Liocephalus macropus.

Head plates broad, smooth or keeled; first internasal not touching rostral. Six or seven supraoculars. Labials six—six; cheek plates rather small; four marginal auriculars; postauriculars granular. Nuchal rows nineteen. Crest low, equal. Tail nearly cylindrical. Posterior extremity quite or nearly reaching end of muzzle. Dimensions of largest specimen: from muzzle to vent 2 in. 9 l.; from vent to end of tail 4 in. 3 l.

Above olive, often with a metallic lustre; sometimes brownish. A transverse interscapular and crural pale-bordered spot, which is often indistinct. A blackish band extends from the orbit to the groin, mostly varied with white near the axilla—obsolete posteriorly. Beneath yellowish or greenish, the gular region sometimes streaked with black.

Hab.—Eastern Cuba. Mr. Chas. Wright has sent specimens to the Smithsonian Institution, which has presented some to the author.

This species is much like the *L. vittatus*, but differs in the greater breadth and smoothness of the head-plates, especially of the supranasals and frontonasals, and in the granular nature of the scales for some distance posterior to the auricular opening; its size is less, more resembling the *raviceps* in this respect.

The species first named by Dr. Edw. Hallowell, as *Holotropis vittatus** has been apparently mistaken by Dr. J. E. Gray for the *L. schreibersii* (*Pristinus schreibersii* Gravenhorst). The head plates are very lanceolate, and strongly keeled, the crest low and equal. It is perhaps the most abundant species of the genus in Cuba, though the *carinatus* only is represented in de la Sagra's work, where it is called *Holotropis microlophus*. The latter species resembles yet exceeds the *macropus* in the breadth of its head-plates; they further differ in being perfectly smooth.

Liocephalus melanochlorus.

Head scales more or less keeled, numerous; anterior extremities of supranasals cut off, sometimes three anterior internasals; always four prefrontals. Six supraorbitals; interparietal lanceolate. Labials six—six. Two prominent marginal auriculars; postauriculars squamous. Scales of the back large, the keels unusually strong; nuchal rows eleven. Crest well developed, highest on the tail. Tail compressed, the scales of the lower surface keeled. Posterior extremity reaching the orbit. Length from muzzle to vent 3 in. 7 lin.; from vent to end of tail 7 in.

General color light green, principally appearing above in two dorsal bands and in the interspaces of a series of about ten transverse black bands extending between them. These become more or less confluent in old males, as do also sometimes the vertical bars on the sides, which are often present. Top of head brownish. Posteriorly beneath spotted with greenish white scales; gular region coarsely reticulated with black. Extremities dusky green above.

Hab.—Hayti, near Jeremie. Mus. Compar. Zoology, Cambridge, Mass. Dr. D. F. Weinland.

Tretioscincus castanicterus.

Char. gen.—Scales large, those of the tail and median dorsal rows keeled. Supranasals none. Internasal broad; but two supraoculars; interparietal large. Gular region covered by the large infralabials. Inferior eyelid with a transparent disc. Extremities moderately developed, digits unequal, four—five. A series of femoral pores medially separated. Tail cylindrical.

Char. specif.—Sixteen rows of scales on the body, of which the median dorsal pair are weakly keeled posteriorly; on the crural region the included rows are all keeled; the carinae are stronger on the tail. Two large marginal

* Proc. Acad. Nat. Sci. Phila.

and two median triangular preanal plates. Five pectoral plates in an arched transverse series. Three pairs of infralabials, one transverse mental, one symphyseal. Labials 8—6; eye over the fifth upper. One loreal, two nasals, nostril between; the anterior slightly bent upon the surface of the muzzle. Fronto-nasals transverse, in contact; frontal nearly parallel-sided, obtuse-angled before and behind. Fronto-parietals longer than broad, in contact; interparietal shield-shaped, its point projecting behind the borders of the parietals; all the head plates impressed-punctate. Posterior extremity scarcely reaching the elbow of the appressed anterior limb; extent of digits in the order, first, second, fifth, third, fourth. Femoral pores six on each side. Tail plates smooth beneath. Length from muzzle to vent 1 in. 9 l., (tail mutilated); of fore limb 6 lines; of hinder, 9 lines.

Color above and on the sides dark chestnut; a bright yellow band, which commences on each side of the base of the tail, extends anteriorly round the outer border of the supraocular plates, and meets its fellow on the rostral; internally it is dark bordered on the head. Beneath yellowish, the scales bordered with chestnut; chin immaculate; under surface of tail yellow spotted.

The discovery of this little lizard is particularly interesting, as exhibiting femoral pores for the first time among the Scincidæ. In other points it nearly resembles the genus *Heteropus* of Fitzinger. One specimen in the Museum of the Philadelphia Academy is labelled as having come from New Grenada.

Mabuia fulgida.

Dr. Girard has regarded the genus *Mabuia* as peculiarly American, the species from the Pacific Islands formerly placed in it belonging more properly to the genus which he first defined under the name *Emoa*, (but which Dr. Gray had previously called *Emœa*), and the East Indian type probably remaining under Dr. Gray's *Riopa* (except the *M. elegans* Gray). This view cannot be considered as fully established, at least as regards the latter group, for Prof. Gill has discovered in the island of Barbadoes a species (*Mabuia lanceolata*) which, in weakness of extremities and cylindrical form, nearly approaches the *M. (Riopa) punctata*. The genus *Emœa* is no longer Polynesian, for a species of it has been discovered in Paraguay by the naturalists connected with the government expedition sent thither.

The history of the American *Mabuiæ* is in a state of some confusion, probably on account of the want of close observation in the discrimination of the species. The following table exhibits the relations of those which appear to be truly distinct.

I. Species in which there are twenty-six or fewer rows of scales on the body: *M. brevis* Günther, from Mexico; *M. punctata*, India, and perhaps the other species placed by Gray in *Riopa*, viz., *M. hardwickii* and *rupPELLii*; *R. sundevallii* Smith, from South Africa, is not stated to possess a transparent eyelid, and hence may not belong to this genus. Possibly *M. elegans* Gray should be placed here.

II. Species in which there are thirty or more rows of scales on the body:

- A. Eye over the seventh superior labial..... *agilis*.*
- B. Eye over sixth superior labial.
 - a. Internasal semidiscoid, its posterior outline straight, *sloanei*.
 - a a. Internasal rhombic;
 - b. As long as broad, in contact with rostral.

Muzzle narrow; the yellow marginal band bordered with brown above on head..... *fulgida*.

b b. Broader than long, rarely or not touching rostral.

c. Frontal acute anteriorly.

Four brown bands on the neck; thirty-four rows of scales, *cuprescens*.

* Vid. Girard Herpetol. U. S. Expl. Exped. p. 261, for synonymy and observations.
1862.]

Two brown bands on neck, thirty-two rows of scales..... *unimarginata*.
c c. Frontal truncate anteriorly.

Scales large..... *surinamensis*.*

C. Eye over fifth superior labial.

Thirty-four rows of scales, head acute..... *aenea*.†

Thirty rows of scales.

Elongate; head acute; appressed extremities not touch-

ing..... *lanceolata*.

Stout; head short; appressed extremities meeting..... *cepedii*.‡

Mabuia fulgida is perhaps the most abundant species in Jamaica, where it has been seen and described by Mr. Gosse under the name of *M. agilis*. That the *agilis* of Dr. Gray is this species is not improbable, though that author has alluded to South American specimens, and quoted synonymy pertaining to the South American species, the original *agilis*, which Girard's description shows to be distinct.

The scales of the median nuchal rows are of unusual breadth. The head is narrow, continuous with the neck, and the muzzle is depressed and acute. The scales have a metallic refulgence, in fresh specimens strongly golden cupreous. There are many small black spots on the dorsal region. The lateral stripe extends from the end of the muzzle, and is black; its yellow superior and inferior borders are brightest anteriorly, the former extending round the muzzle, and having a brown inner border. The tail is speckled with blackish brown, and the extremities are barred with the same; lips and beneath yellowish. Specimens probably exist in most of the larger museums.

Mabuia cuprescens.

Body short, gradually tapering into the narrow acute head. Length of muzzle from canthus of eye a little greater than width between anterior margins of orbits. Supranasals in contact over rostral. Frontonasal rhombic, broader than long. Frontal not truncate, its greatest width three quarters its length. Four supraoculars. Anterior border of interparietals angular; parietals in contact posteriorly; postparietals well developed. Superior labials eight, six beneath eye; with the seventh the largest. Scales smallest on sides, in thirty-four rows. Seven marginal prenasals. Extremities touching when extended. Length from muzzle to vent 3 in.; from vent to end of tail 5 in.; hinder limb 1 in.; fore limb 9 lin.; muzzle to ear 7 lin. General color above iridescent brown or coppery, darkest on the median six rows of scales. A brown band extends from the muzzle to the groin, covering three and a half scales on the neck, one and two halves on the side. It is bounded above and beneath by broad gray bands, of which the superior shades into the dorsal color, except where bounded above by a narrow brown band which is most distinct on the nape, though it extends on the head-plates and is traceable on the back. The lower light band is margined inferiorly by a darker shade, which becomes a band between the rictus and axilla. Tail pale gray; beneath whitish.

Hab.—St. Thomas. From Mr. A. H. Rüse, a gentleman whose valuable collections have been for some time adding much to our knowledge of the zoology of the West Indies.

A very pretty species resembling the *aenea* in form, and the number of rows of its scales. It has four supraoculars instead of three, the frontal is not truncate anteriorly, the eye rests upon the sixth not fifth superior labial. The coloration is different.

* Hallowell, Trans. Amer. Phil. Soc.

† "Scinque (appelé Anolis de terre et Mabouia dans les Antilles) Cuvier."

‡ *Eumeces mabuia* Dum., Bibr., as Dr. Gray has pointed out.

§ I have supposed a specimen from the Paris Museum labelled as *Eumeces mabuia* from Marie Galante, to belong to the *M. aenea*, while new Grenadian and Trinidad specimens have been referred to the *cepedii*.

Mabuia unimarginata.

Form slender, head as wide as the neck to the orbits, the muzzle not elongate; scales (in the specimen described) in thirty-two rows. Supranasals in contact; frontal elongate, not truncate anteriorly; a postnasal. Supraoculars four; superior labials eight, eye over sixth. Appressed limbs overlapping. Seven marginal anal plates. From muzzle to tympanum 6 lines; from muzzle to vent 2 in. 7 lin.; from vent to end of tail 3 in. 10 lin., anterior extremities 9 lin.

Above rather dark brown; a narrow black band extends from the end of the muzzle to the groin, which has a bright yellow inferior border. Beneath this the sides are brown. Abdomen yellowish.

Hab.—Panama.

This species resembles strongly the *cepedii* and *aenea*.

Mabuia lanceolata.

Body narrow, head lanceolate, narrow, the distance from the muzzle to the brachium nearly two-thirds that from the latter point to the groin. Frontal breadth less than length of muzzle anterior to orbit. Internasal nearly as long as broad, in contact with rostral, and frontal. Four supraorbital; frontoparietals divaricate on account of the intervention of the angle of the interparietal. Seven upper labials, eye over fifth. Lateral head plates narrow. Extremities weak, not touching when extended upon the sides. Tail cylindrical at base, compressed at its middle with a large median series of scales above as is frequently seen in this member when reproduced. From muzzle to tympanic meatus 5 lin., meatus to vent 2 in. 2 l. Tail mutilated; anterior extremity 7 l., posterior 11 l.

General color iridescent olivaceous; no lateral band; sides of body, neck and jugulum with numerous narrow black streaks. Labial and infralabials yellowish margined with black; head shields sometimes with darker variations.

This very distinct species was discovered by my friend Prof. Theodore Gill, in the Island of Barbadoes. This gentleman has made a valuable collection of Trinidad reptiles, through which the knowledge of the fauna of that Island will soon be increased.

Emœa frenata.

Head distinct; muzzle from anterior canthus to eye longer than breadth of frontal region. Appressed extremities overlapping. Auricular meatus without lobes. Eight or nine upper labials, eye over sixth or seventh. Four supraorbitals. Interparietal nearly trigonal. Frontoparietal broadly triangular, nearly as long as frontal; the latter narrowly truncate posteriorly, in contact with internasal anteriorly. This plate is rhombic, broader than long. Supranasals in contact behind rostral. Nostril near the middle of nasal plate. Scales in thirty or thirty-two rows. Length from muzzle to ear 4 lin.; muzzle to vent 2 in. 6 l.; posterior extremities 11 lin.

Above bright olive, with golden reflections on the head. Brownish spots produce a darker shade on the posterior part of the back. An irregularly margined brownish black band extends from the end of the muzzle to the groin; it is margined above and below by lighter. Superior labials yellow. Beneath yellowish.

Hab.—Paraguay. Mus. Smithsonian (5855) and Acad. Nat. Sci. Discovered by Mr. Wood of the U. S. Expedition up the River Paraguay.

This is the only species of the genus which does not inhabit some part of the Polynesian or Malaysian Archipelagos. It constitutes the nearest approach to the genus *Mabuia*. Seven species of *Emœa* have been enumerated by Dr. Chas. Girard, in the Herpetology of the U. S. Exploring Expedition under Commodore Wilkes.*

* Page 263.

Diploglossus stenurus.

Sides vertical: outline of body contracted at axillae; head distinct, muzzle obtuse: tail depressed at base, much compressed throughout the remainder of its length, twice as long as from vent to opposite auricle. Extremities pressed to the sides not meeting; toes compressed, very unequal. Scales in forty-two longitudinal series, each with 26 lines and a strong median keel. From orbit to end of muzzle equal to width between orbits. Postoccipital smaller than interoccipital. Five supraorbitals. Internasal longer than in *D. occidentus*, nine-sided, the anterior angle right, the latero-posterior produced. Lateral borders of frontal curved. A rhombic postnasal; two frenals longer than high; nine supralabials, suborbital over 6th and 7th; four pairs of large infralabials. Maxillary and mandibular teeth subcuspid, with an antero-lateral groove. Length from muzzle to vent 5 in. 10 l.; tail 9 in. 1 lin.; posterior extremity 2 in.

Color above brown, with occasional spots formed by a deeper brown scale. Sides with vertical undulate light bars, darker bordered, which are subdivided superiorly so as to form longitudinal series of light spots. Top of head uniform. Tail with light vertical bars. Beneath yellowish.

Hab.—Hayti. Found near Jeremie, by Dr. A. F. Weinland, whose collection is in Prof. Agassiz splendid Museum at Cambridge. Beside species described in this memoir, Dr. Weinland obtained the types of the previously unknown genera *Panolopus* and *Ialtris*.

In this species and the *D. occidentus* (*Celestus* Gr.), in the *Oneyda sagrae* (*Diploglossus* part. Gray,) and *Panolopus costatus*, I have observed that the slender quasi-squamous terminal third of the tongue, is retractile within the other portion, which covers it as a sheath. This is not mentioned by the French herpetologists; Wiegmann does not mention it in *Herpetologia Mexicana*, but says in *Archiv f. Naturgesch.* 1837, p. 129, “*lingua* subparte basali, aquamarum linguam forma referenti, quasi emergente.” It is a structure probably characteristic of the *Diploglossinae*. It does not occur in *Siderolamprus*, which is allied to *Plestiodon*, though resembling *Diploglossus* in the plating of the head.

On *Neosorex albibarbis*.

BY E. D. COPE.

Of the twenty well distinguished species of shrews which Prof. Baird,* enumerates as inhabiting the United States, one only exhibits that peculiar modification of structure which is indicative of his genus *Neosorex*. This animal, the *N. navigator*, Cooper, has been found in Washington Territory. It is, therefore, a matter of some interest that the present article introduces to notice a second species which the author discovered at the Profile Lake, in the Franconia Mountains, New Hampshire. In September, 1859, two specimens were seen swimming in the Lake about forty feet from the bank: their motion was undulatory, their backs alternately appearing above, and disappearing beneath the surface of the water. They were caught under stones upon the shore, where they had taken refuge. This aquatic habit, so little known among American *Soricinae*, would be inferred from comparison with the water-loving *Crossopodes* of Europe, where we find the feet similarly fringed with a border of stiff hairs.

N. albibarbis as compared with the *navigator* has a shorter tail, and a shorter hind foot. The color of the thorax and abdomen is also much darker.

25—5 4—4
Dental formula — — — — —. The internal process of the superior incisor
2 2—2 3—3

* In vol. viii. of the *Pacif. R. R. Rept.*

Fig. 40, does not give a recognizable outline of typical *Pal. rufa*, of the size of the figure.

Fig. 43, page 27, refers to a species of shell found in the Ohio Canal at Columbus, Ohio. Other shells of a similar form at maturity, from other localities have been confounded with this as *Pal. obesa*; but later investigations referring to the embryonic young and other specimens of various sizes would warrant the conclusion that they were distinct. This shell stands related on one hand to *integra* and *ponderosa*, and on the other to *Pal. regularis*, Lea. The young shells nearly but not quite resemble Mr. Lea's types of *regularis*.

Fig. 44. *Pal. genicula*, is more nearly allied to *integra* than to any other known form.

Mr. Binney has given a figure of the lingual dentition of specimens of *Pal. integra* on page 29. It is to be regretted that minute comparisons were not made between those of *integra* with the teeth of *rufa* from the specimens of the two species which were furnished him by the writer for that purpose.

Mr. Binney is also unfortunate in his treatment of *Pal. coarctata*, Lea. It certainly cannot short of doing violence to the subject be made to embrace *Pal. exilis*, Anth., to which *P. compressa* is here submitted as a synonym.

ERRATA AND ADDENDA.

- Page 71, line 9 from bottom, for "chryostictus" read *chrysostictus*.
 73, line 34, for *Ialtris* read *Jaltris*.
 75, line 7 from bottom, for *Ophiomorphus* read *Opheomorphus*.
 76, note 3d, for 210 read 180.
 77, line 12, add loreal oblong.
 77, line 28, for "Haliophis" read *Alsophis*.
 78, line 13, for "epinephalus" read *epinephelus*.
 154, line 11, add after *Halophila*, Gird., (?=*Platymantis*, Gthr.)
 154, line 12, add *plicifera*.
 184, line 5 from bottom, add Tympanic orifice distinct.
 189, line 34, for 1 in. 9 l. read 2 in. 9 l.
 249, line 6, for *Carphoptis Harpesti* read *Carphophis harpesti*.
 337, line 3 from bottom, for *Homeroselaps* read *Homoroselaps*.
 337, note, for Falvin read Salvin.
 340, line 5, add, although the same parts may usually very early attain completion, thus becoming of great systematic value.
 340, line 4 from bottom, add, from Ooroomiah.
 340, line 3 from bottom, add Umvoti Zulu Country.
 341, line 30, add, from Umvoti Zulu Country.
 344, line 8, add, from Ooroomiah.
 346, before TESTUDINATA insert CROCODILLA. *Jacare latirostris*, Gray.
 Dum. Bibr. iii. p. 86, Buenos Ayres.
 350, line 14, add Perhaps the curiyú of Azara, i. 226.
 350, line 26, add as shown by Dr. J. E. Gray.
 353, line 5, for *podicipinus* read *podicipitinus*.
 353, line 29, for *variabilis* read *intermedius*.
 356, line 6 from bottom, and
 357, line 21, for Von Martins read Von Martens.
 358, between lines 40 and 41, add *stermosignatus* ex Gthr.
 358, line 46, after *Phryne* add Fitz.
 359, note, line 9, add perhaps not different from *H. baudinii*.

The Reports of the Recording Secretary and Curators were read as follows :

[Dec.